

## SECTION 4.0

# DEVELOPMENTAL ANALYSIS

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This section analyzes the economic power benefits of the Projects, and estimates the annual cost of the Project, including costs for any construction, operation, maintenance, and environmental conditions.

Under the Commission's approach to evaluating the economics of hydropower projects as articulated in the Commission's Order Issuing a New License to the Mead Corporation (FERC 1995), the Commission employs a "current cost approach" in that all costs are presented in current dollars (e.g., no consideration for potential future power costs, inflation, escalation, or deflation beyond the license issuance date; and costs to be expended over the license term are summed and normalized as current dollars). The Commission's current cost economic analysis provides a general estimate of the potential developmental benefits and costs<sup>1</sup> and non-developmental benefits and costs of a project.<sup>2</sup> This section uses the Commission's current cost method.

All costs in this section are provided in 2013 U.S. dollars and most are to, at least, the nearest \$1,000.

## **4.1 Alternatives Considered in This Section**

This section analyzes two alternatives. The No Action Alternative is the current operation of the Project under its existing license and the current waterway environment. Costs under the No Action Alternative are YCWA's best estimate of the costs to operate the Project in the future. While YCWA has relied somewhat on historic costs, it has not used those historic costs without adjustment because PG&E, under its May 1966 power purchase contract with YCWA, has absorbed much of the costs to operate the Project. PG&E reimburses YCWA annually for YCWA's bond payments associated with the construction of the Project and for major Project repairs. Since historic costs are underestimates, YCWA has made its best estimate of the costs to operate the Project in the future.

Power benefits under the No Action Alternative are based on modeled generation from WY 1970 through WY 2010 and on current market prices. YCWA has not used historic generation or its existing power purchase contract to estimate power benefits because these would be misleading for this analysis. Under the contract, PG&E receives at no cost the electric output of the Project, excluding the New Bullards Bar Minimum Flow Powerhouse.<sup>3</sup> YCWA and PG&E entered into

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<sup>1</sup> Developmental benefits of the Project include power generation, water supply, flood control, irrigation and river navigation.

<sup>2</sup> Non-developmental benefits of a waterway include fish and wildlife resources, recreational opportunities and other aspects of environmental quality.

<sup>3</sup> One aspect of the power purchase contract is that PG&E dispatches water through the Project's Narrows 2 Powerhouse and PG&E's Narrows 1 Powerhouse, which is not part of the Project, based on facility capacity and facility efficiency as well as a preference for California Renewable Portfolio Standards (RPS), power at the Narrows 1 Powerhouse (i.e., no consideration to the respective water rights of YCWA and PG&E). This dispatching is considered part of the No Action Alternative.

a separate Qualifying Facilities (QF) contract for New Bullards Bar Minimum Flow Powerhouse. YCWA is in the process of exploring new contracts.

Since the revenue from the existing power purchase contract and QF contract are not reasonable estimates for the value of the power generated by the Project and YCWA has not entered into a new power purchase contract that could be used to provide a reasonable estimate the value of the Project power, YCWA estimated the unit value of the Project power under the No Action Alternative using published information in the current California electricity market and estimated generation under the No Action Alternative conditions.

The second alternative is YCWA’s proposed Project, including YCWA’s proposed conditions, which is described in YCWA’s Application for a New License. YCWA’s proposed Project assumes water would be dispatched between Narrows 2 and Narrows 1 powerhouse as it is dispatched today. Costs under YCWA’s proposed Project are similar to the costs under the No Action Alternative, with the exception of YCWA’s proposed additions to the Project and proposed protection, mitigation and enhancement (PM&E) conditions.

For ease of comparison, power benefits under YCWA’s proposed Project were estimated in the same manner that power benefits were estimated for the No Action Alternative – using published information in the current California electricity market for the unit value of the power (i.e., same unit values used in the No Action Alternative), and estimated generation under YCWA’s Proposed Project conditions.

## **4.2 Power and Developmental Benefits**

Table 4.2-1 summarizes the assumptions and economic information used in this analysis. This information is provided in Exhibit D of YCWA’s Application for New License, and only summarized here. Cost items common to all alternatives include: taxes and insurance costs; net investment (the total investment in power plant facilities remaining to be depreciated); estimated future capital investment required to maintain and extend the life of plant equipment and facilities; relicensing costs; normal O&M cost; and Commission fees.

**Table 4.2-1. Cost items common to No Action Alternative and YCWA’s Proposed Project Alternative.**

<b>Assumption</b>	<b>Value</b>
Period of Analysis <sup>1</sup>	30 Years
Term of Financing <sup>2</sup>	30 Years
Federal and State Tax Rate	7.5%
Insurance Rate <sup>2</sup>	0%
Base Year for Costs and Benefits <sup>2</sup>	2013
Total Original Net Investment (\$1966) <sup>3</sup>	\$185,000,000
Depreciated Plant In-Service Costs (\$2013/yr) <sup>3</sup>	\$2,800,000
Total Relicensing Cost (\$2013) <sup>4</sup>	\$27,000,000
Future Major Capital Addition Costs (\$2013/yr) <sup>5</sup>	\$7,500,000
Operation and Maintenance, including Insurance (\$2013/yr) <sup>6</sup>	\$10,500,000
Local, State and Federal Fees, including Commission Fees (\$2013/yr) <sup>7</sup>	\$2,000,000
Property Taxes	Not Applicable

**Table 4.2-1. (continued)**

Assumption	Value
Narrows 2 Powerhouse Monthly Peak/Partial Peak/Off-Peak/Super Off-Peak Energy Values(\$/MWh/month) <sup>7</sup>	Varies by Block and Month
New Colgate Powerhouse Monthly Peak/Partial Peak/Off-Peak/Super Off-Peak Energy Values(\$/MWh/month) <sup>8</sup>	Varies by Block and Month
New Bullards Bar Minimum Flow Powerhouse Monthly Peak/Partial Peak/Off-Peak/Super Off-Peak Energy Values(\$/MWh/month) <sup>9</sup>	Varies by Block and Month
New Colgate Powerhouse Monthly Ancillary Services Values(\$/MW/month) <sup>10</sup>	Varies by Month
Dependable Capacity Value (\$/kW/yr) <sup>11</sup>	0
Interest Rate <sup>2</sup>	2.0%
Discount Rate <sup>2</sup>	5.0%
Operating Reserve (\$2013/yr) <sup>12</sup>	\$1,667,000
Transmission Access Cost (\$2103/yr) <sup>13</sup>	\$100,000

<sup>1</sup> While FERC's current cost approach requires an applicant to base costs in Exhibit D on a 30-year license term, as described in the Initial Statement of YCWA's Application for New License, YCWA requests, with good cause, from the Commission a new license with a term of 50 years.

<sup>2</sup> From Table 2.1-1 in Exhibit D of YCWA's Application for New License.

<sup>3</sup> From Section 5.1.1. in Exhibit D of YCWA's Application for New License.

<sup>4</sup> From Section 5.1.1. in Exhibit D of YCWA's Application for New License.

<sup>5</sup> From Section 5.1.4. in Exhibit D of YCWA's Application for New License.

<sup>6</sup> From Section 5.1.5. in Exhibit D of YCWA's Application for New License.

<sup>7</sup> From Table 5.2-9 in Exhibit D of YCWA's Application for New License.

<sup>7</sup> From Section 5.2.3.2.1 in Exhibit D of YCWA's Application for New License.

<sup>8</sup> From Section 5.2.3.2.2 in Exhibit D of YCWA's Application for New License.

<sup>9</sup> From Section 5.2.3.2.3 in Exhibit D of YCWA's Application for New License.

<sup>10</sup> From Section 5.2.3.3 in Exhibit D of YCWA's Application for New License.

<sup>11</sup> From Section 5.1.7 in Exhibit D of YCWA's Application for New License.

<sup>12</sup> From Section 5.1.8 in Exhibit D of YCWA's Application for New License.

### 4.3 Comparison of Alternatives

Table 4.3-1<sup>4</sup> compares the benefits (i.e., capacity, energy and ancillary services), costs (i.e., non-environmental/recreation and environmental/recreation) and net benefits of the No Action Alternative and YCWA's Proposed Project Alternative.

**Table 4.3-1. Comparison of annual power benefits, costs net benefits between No Action Alternative and YCWA's Proposed Project Alternative.**

Value	No Action Alternative <sup>1</sup>	YCWA's Proposed Project Alternative <sup>2</sup>	Change <sup>3</sup>
<b>AVERAGE ANNUAL GROSS POWER BENEFITS</b>			
Capacity	--	--	--
Installed	361,900 kW	361,900 kW	None
Dependable	287,366 kW	285,457 kW	-1,909 kW
<i>Subtotal - Value in 2013 Dollars</i>	<i>\$0</i>	<i>\$0</i>	<i>None</i>
Energy	--	--	--
Peak Energy	187,534 MWh	185,767 MWh	-1,767 MWh
Partial Peak Energy	493,562 MWh	490,118 MWh	-3,444 MWh
Off-Peak Energy	604,914 MWh	599,498 MWh	-5,416 MWh
Super Off-Peak	116,242 MWh	114,306 MWh	-1,936 MWh

<sup>4</sup> Table 4.3-1 is the same as Table 7.-1 in Exhibit D of YCWA's Application for New License.

**Table 4.3-1. (continued)**

Value	No Action Alternative <sup>1</sup>	YCWA's Proposed Project Alternative <sup>2</sup>	Change <sup>3</sup>
<b>AVERAGE ANNUAL GROSS POWER BENEFITS (continued)</b>			
<i>Subtotal - Value in 2013 Dollars</i>	\$46,968,891	\$46,632,832	-\$336,059
Ancillary Services	--	--	
Regulation Up	296,939 MWh	299,656 MWh	2,717 MWh
Regulation Down	234,377 MWh	232,027 MWh	-2,350 MWh
Spinning Reserve	1,218,931 MWh	1,229,446 MWh	10,515 MWh
<i>Subtotal - Value in 2013 Dollars</i>	\$6,495,661	\$6,568,654	\$72,993
<b>Total - Value in 2013 Dollars</b>	<b>\$53,464,552</b>	<b>\$53,201,486</b>	<b>-\$263,066</b>
<b>AVERAGE ANNUAL COSTS</b>			
Non-Environmental/Recreational	\$25,967,000	\$25,967,000	None
Addition of New Colgate Powerhouse Tailwater Depression System	--	\$407,200	-\$407,200
Addition of New Bullards Bar Reservoir Flood Control Outlet	--	\$4,213,000	-\$4,213,000
Environmental/Recreational	\$1,859,000	\$3,001,000	-\$1,142,000
<b>Total - Value in 2013 Dollars</b>	<b>\$27,826,000</b>	<b>\$33,588,200</b>	<b>-\$5,762,200</b>
<b>AVERAGE ANNUAL NET BENEFIT</b>			
<b>Total 2013 U.S. Dollars</b>	<b>\$25,638,552</b>	<b>\$19,613,286</b>	<b>-\$6,025,266</b>

<sup>1</sup> Calculate by subtracting the No Action Alternative from YCWA's Proposed Project value.

### 4.3.1 No Action Alternative

YCWA's estimate of average annual cost associated with environmental and recreation measures under the No Action Alternative is \$1,859,000 (Section 5.1.9 in Exhibit D of YCWA's Application for New License). Assuming these costs, the No Action Alternative would have an estimated average annual output of 1,402,252 MWh, which, together with ancillary benefits, would provide annual power benefits of \$53,464,552. Subtracting the current costs of \$27,826,000 yields an annual net benefit of \$25,638,552. (Table 4.3-1.)

### 4.3.2 YCWA's Proposed Project Alternative

The conditions that YCWA proposes, summarized in Table 4.3-2,<sup>5</sup> increase the average annual cost of environmental and recreation measures to \$3,001,000 (Table Section 5.1.9 in Exhibit D of YCWA's Application for New License). In addition, YCWA's proposed New Colgate Powerhouse TDS and New Bullards Bar Flood Control Outlet together would increase average annual costs by \$4,620,200. These result in an estimated average annual output of 1,389,688 MWh, which, together with ancillary benefits, would provide annual power benefits of \$53,201,486. Subtracting the costs of \$33,588,200 yields an annual net benefit of \$19,613,286. (Table 4.3-1.)

<sup>5</sup> Table 4.3-1 is the same as Table 5.1.9 in Exhibit D of YCWA's Application for New License.

**Table 4.3-2. Yuba County Water Agency’s estimated costs in 2013 dollars related to implementation of YCWA’s proposed conditions as part of continued operation of the Yuba River Development Project. All costs are rounded up to at least the nearest \$1,000 unless otherwise specified.**

YCWA’s Proposed Condition		Total Capital Cost Over 30 Years <sup>1</sup> (2013 U.S. Dollars)	Total O&M Cost Over 30 Years (2013 U.S. Dollars)	Annualized Cost Over 30 Years <sup>2</sup> Excluding Energy (2013 U.S. Dollars)	Assumptions Over 30 Years <sup>3</sup>
Number	Description				
<b>GENERAL</b>					
GEN1	Meet with Agencies and Indian Tribes Annually	\$0	\$300,000	\$10,000	Preparation, participation and follow-up on one meeting each year at a cost of \$10,000 per year.
GEN2	Review Special-status Species Lists and Assess Newly-listed Species Annually	\$0	\$540,000	\$18,000	Gather/ review special-status species lists (including non- Onative invasive species lists) each year at cost of \$3,000 per year, and assume six studies over 30 years at cost of \$75,000 per study.
GEN3	Provide Environmental Training to Employees	\$0	\$60,000	\$2,000	Prepare for one environmental (including cultural) training meeting each year with all O&M staff at a cost of \$10,000 per meeting, and once with newly-hired staff (assume 30 new staff over 30 years) at a cost of \$1,000 per staff meeting.
GEN4	Develop and Implement a Coordinated Operations Plan for Yuba River Development Project and Narrows Project	\$0	\$375,000	\$13,000	One time cost of \$75,000 to develop a coordinated operations agreement, and average cost of \$10,000 per year for agreement implementation. Assumes no new equipment needed to implement condition.
<i>subtotal</i>		--	<i>\$1,275,000</i>	<i>\$43,000</i>	--
<b>GEOLOGY AND SOILS</b>					
GS1	Implement Erosion and Sediment Control Plan	\$0	\$0	\$0	This condition implemented for a specific work, and the cost for implementation, which may include the development of site-specific plan for the work based on this condition, included at the time in the cost of the specific work.
GS2	Implement Our House and Log Cabin Diversion Dams Sediment Management Plan	\$500,000	\$11,039,000	\$385,000	For sediment pass-through, assumes one O&M staff at Our House Diversion Dam for two half days three times once every other year (\$1,800 every 2 years, or \$27,000 over 30 years), and two O&M staff at Log Cabin Diversion Dam for two half days twice every third year (\$1,200 every 3 years or \$12,000 over 30 years). Also, assumes \$500,000 for added maintenance of low level outlet due to sediment passing through the outlet. For sediment removal, assumes it would occur at Log Cabin Diversion Dam twice over a 30-year period at a cost of \$1,000,000 per event, and at Our House Diversion Dam three times over a 30-year period at a cost of \$3,000,000 per event.

**Table 4.3-2. (continued)**

YCWA's Proposed Condition		Total Capital Cost Over 30 Years <sup>1</sup> (2013 U.S. Dollars)	Total O&M Cost Over 30 Years (2013 U.S. Dollars)	Annualized Cost Over 30 Years <sup>2</sup> Excluding Energy (2013 U.S. Dollars)	Assumptions Over 30 Years <sup>3</sup>
Number	Description				
<b>GEOLOGY AND SOILS (continued)</b>					
GS3	Pass Large Woody Material at Our House and Log Cabin Diversion Dams	\$500,000	\$900,000	\$47,000	Two O&M staff at Our House Diversion Dam for four days four times each year (\$20,000/yr), and two O&M staff at Log Cabin Diversion Dam for two days four times each year (\$10,000/yr). Assumes no new equipment needed to implement condition. Assumes \$500,000 for improvements to roads for placing LWM downstream of the dams.
GS4	Implement New Bullards Bar Reservoir Floating Material Management Plan	\$600,000	\$3,060,000	\$122,000	Eight O&M staff each year for 15 days in the spring to collect floating material and place it in coves for burning (\$72,000/yr); four O&M staff each year for 5 days in the fall to burn the material (\$24,000/yr); two O&M staff each year for 5 days to open and close the skid roads to the burn areas and stabilize the burn areas (\$6,000/yr); and replace boats/tugs/booms used to collect material three times over the term of the new license (\$600,000 over 30 years).
<i>subtotal</i>		<i>\$1,600,000</i>	<i>\$14,999,000</i>	<i>\$553,000</i>	--
<b>WATER RESOURCES</b>					
WR1	Implement Hazardous Materials Management Plan	\$0	\$0	\$0	This condition implemented for a specific work, and the cost for implementation, which may include the development of site-specific plan for the work based on this condition, included at the time in the cost of the specific work.
WR2	Determine Water Year Types for Conditions Pertaining to Our House Diversion Dam, Log Cabin Diversion Dam and New Bullards Bar Dam	\$0	\$30,000	\$1,000	Gather appropriate information and determine Water Year Types each year at cost of \$1,000 per year.
WR3	Determine Water Year Types for Conditions Pertaining to Narrows 2 Powerhouse and Narrows 2 Full Bypass	\$0	\$30,000	\$1,000	Gather appropriate information and determine Water Year Types each year at cost of \$1,000 per year.
WR4	Implement Streamflow and Reservoir Level Compliance Monitoring Plan	\$750,000	\$1,050,000	\$60,000	Maintain all gages at a cost of \$10,000 per year, and replace all gages twice at a cost of \$600,000 over 30 years. Increase the compliance-level measurement capacity of the weirs below New Bullards Bar Dam ,Our House Diversion Dam, and Log Cabin Diversion Dam at a cost of \$50,000 each.
WR5	Maintain New Bullards Bar Reservoir Minimum Pool	\$0	\$0	\$0	No new equipment needed and minimal labor.
WR6	Operate New Bullards Bar Reservoir for Flood Control	\$0	\$0	\$0	No new equipment needed and minimal labor.
<i>subtotal</i>		<i>\$750,000</i>	<i>\$1,110,000</i>	<i>\$62,000</i>	--

**Table 4.3-2. (continued)**

YCWA's Proposed Condition		Total Capital Cost Over 30 Years <sup>1</sup> (2013 U.S. Dollars)	Total O&M Cost Over 30 Years (2013 U.S. Dollars)	Annualized Cost Over 30 Years <sup>2</sup> Excluding Energy (2013 U.S. Dollars)	Assumptions Over 30 Years <sup>3</sup>
Number	Description				
<b>AQUATIC RESOURCES</b>					
AR1	Maintain Minimum Streamflows below Our House Diversion Dam, Log Cabin Diversion Dam and New Bullards Bar Dam	\$1,000,000	\$1,180,000	\$73,000	One staff person visit to Our House and Log Cabin diversion dams and New Bullards Bar Dam once each month for a half day to adjust valves for minimum flows, for a total of \$6,000 per year. Assumes \$1,000,000 to increase capacity of Our House, Log Cabin and New Bullards Bar dams fish release valves for new minimum flow requirements.
AR2	Control Project Spills at Our House Diversion Dam	\$0	\$120,000	\$4,000	Assumes a spill cessation event will occur 20 out of 30 years at Our House Diversion dam, and on average twice each year when they occur, and one staff will be on site a half day for 5 days for each event. Reporting for each event is assumed to be \$3,000. Assumes no new equipment needed to implement condition.
AR3	Maintain Minimum Streamflows at Narrows 2 Powerhouse and Narrows 2 Full Bypass	\$0	\$360,000	\$12,000	One staff person visit to Narrows 2 Powerhouse once each month to make adjustments for minimum flows, for a total of \$12,000 per year. Assumes no new equipment needed to implement condition.
AR4	Control Project Spills at New Bullards Bar Dam	\$0	\$18,000	\$1,000	One staff person to visit New Bullards Bar Dam spillway once a day for 10 additional days every 10 years.
AR5	Implement Aquatic Invasive Species Management Plan	\$40,000	\$215,000	\$9,000	Fabrication, installation and maintenance of informational signs at New Bullards Bar Reservoir at a total of \$40,000 over 30 years. Annual protocol surveys at New Bullards Bar at \$6,500/yr. BMPs for specific projects would be developed for the specific project, and the cost for development and implementation included at the time in the cost of the specific project.
AR6	Implement New Bullards Bar Reservoir Fish Stocking Plan	\$0	\$793,000	\$26,000	Two plantings per year, one for each fish species. Total of 833 pounds of rainbow trout (60 fish per pound) at \$20 per pound and 325 pounds of kokanee (200 fish per pound) at \$30 per pound. One delivery of each per year to the Cottage Creek Boat Ramp. Private hatchery prices.

**Table 4.3-2. (continued)**

YCWA's Proposed Condition		Total Capital Cost Over 30 Years <sup>1</sup> (2013 U.S. Dollars)	Total O&M Cost Over 30 Years (2013 U.S. Dollars)	Annualized Cost Over 30 Years <sup>2</sup> Excluding Energy (2013 U.S. Dollars)	Assumptions Over 30 Years <sup>3</sup>
Number	Description				
<b>AQUATIC RESOURCES (continued)</b>					
AR7	Implement Upper Yuba River Aquatic Monitoring Plan	\$0	\$730,000	\$24,000	Assumes four stream fish and four FYLF each sampled four times at cost of \$9,000/site for stream fish and \$8,000/site for FYLF. Assumes three water quality sampling sites each sampled three times at cost of \$4,000/site. Assumes installing, maintaining and operating three continuous water temperature recorders for 25 years at cost of \$10,000/year. Assumes channel morphology and riparian vegetation monitoring at three sites each four times each at cost of \$8,000/site and \$6,000/site, respectively. Also assumes four reports at cost of \$10,000 per report and interaction with agencies as needed.
<i>subtotal</i>		<i>\$1,040,000</i>	<i>\$3,416,000</i>	<i>\$149,000</i>	--
<b>TERRESTRIAL RESOURCES</b>					
TR1	Implement Integrated Vegetation Management Plan	\$0	\$1,150,000	\$38,300	Three surveys of all areas at \$150,000 and three surveys of just high use areas at \$50,000 on NFS land for NNIPs over 30 years. Treatment of NNIP on NFS land (currently known weeds at \$10,000 a year for each occurrence for five years and an assumed additional five occurrences at \$10,000 a year for each occurrence for 5 years ). Re-vegetation of areas of Project-related ground-disturbing activities at \$100,000 (non-routine) (assume four projects at \$50,000 each for revegetation needs). Implementation of LOPs and other protection measures for sensitive areas (assume assorted costs of \$50,000 for this implementation and other general support).
TR2	Implement Bald Eagle and American Peregrine Falcon Management Plan	\$0	\$150,000	\$5,000	Peregrine falcon surveys are on an as needed basis, but for estimating cost, an average of one complete survey (two visits at a cost of \$5,000) every 3 years is assumed. One complete bald eagle nesting survey (3 visits at a cost of \$10,000) every 5 years is assumed. Installation of buoys for one nest buffer is assumed at \$2,000 annually.
TR3	Implement Ringtail Management Plan	\$0	\$120,000	\$4,000	Bi-annual inspection of exclusion measures assumed at \$2,500 annually. Installation and Maintenance of exclusion measures assumed at \$1,500 annually.
TR4	Implement Bat Management Plan	\$0	\$77,000	\$3,000	Installation and annual inspection of exclusion devices at \$2,000 per year, with facility inspections every two years at a cost of 1,100 per inspection
<i>subtotal</i>		<i>\$0</i>	<i>\$1,497,000</i>	<i>\$50,000</i>	--

**Table 4.3-2. (continued)**

YCWA's Proposed Condition		Total Capital Cost Over 30 Years <sup>1</sup> (2013 U.S. Dollars)	Total O&M Cost Over 30 Years (2013 U.S. Dollars)	Annualized Cost Over 30 Years <sup>2</sup> Excluding Energy (2013 U.S. Dollars)	Assumptions Over 30 Years <sup>3</sup>
Number	Description				
<b>ESA-LISTED SPECIES</b>					
TE1	Monitor Water Temperature Downstream of Narrows 2 Powerhouse	\$20,000	\$430,000	\$15,000	Monitor and download water temperature data once every three months at five sites at a cost of \$10,000 per year, and QA/QC and make data available on a publicly-accessible website such as CDEC, and replace/fix recorders at a cost of \$5,000 per year.
TE2	Monitor Chinook Salmon Downstream of Narrows 2 Powerhouse	\$240,000	\$6,800,000	\$235,000	Operate Vaki Riverwatcher™ (assumes full time equivalent, or FTE), conduct escapement & annual reports (assumes 1.5 FTE).
TE3	Establish Lower Yuba River Anadromous Fish Ecological Group	\$0	\$1,716,000	\$57,000	Three meetings each year at \$19,000 per meeting.
TE4	Control Project Ramping and Flow Fluctuations Downstream of Englebright Dam	\$0	\$2,340,000	\$78,000	For ramping, coordination requires four senior staff for 2 hours each week year round (\$52,000/yr). For flow fluctuation, coordination requires four senior staff 2 hours a week from September 1 through March 31 each year (\$26,000/yr). O&M staff time not included and assumes no new equipment needed.
<i>subtotal</i>		<i>\$260,000</i>	<i>\$11,286,000</i>	<i>\$385,000</i>	--
<b>RECREATION RESOURCES</b>					
RR1	Implement Recreation Facilities Management Plan <sup>4</sup>	--	--	--	The cost breakdown is provided by major facility, as requested by FERC in previous relicensings. Assumes the recreation road, parking area and camping spur costs are included in the Transportation System Management Plan and not the Recreation Plan. The O&M costs: 1) include YCWA staff time to operate facilities on YCWA land; 2) assumes the rest of the facilities on NFS land would be operated through concessionaire at no cost to YCWA, which is different than the current O&M cost agreement with the Forest Service whereby YCWA pays the Forest Service for actual Forest Service cost to O&M. In addition, O&M costs include annualized monitoring costs of \$9,000/year, which includes annual occupancy reports, 6-year observation surveys and reports and 12-year visitor surveys and reports). Note: About 83% of the total Condition RRI cost is for the rehabilitation and operation of existing recreation facilities over the term of the new license. The remaining 17% is for new and enhanced facilities and for recreation monitoring.
	Schoolhouse Campground	\$1,452,000	\$1,405,800	\$95,260	
	Dark Day Campground	\$392,000	\$769,500	\$38,717	
	Hornswoggle Campground	\$1,300,000	\$1,405,800	\$90,193	
	Cottage Creek Campground	\$1,400,000	\$1,278,000	\$89,267	
	Garden Point Boat-in Campground	\$530,000	\$652,500	\$39,417	
	Madrone Cove Boat-in Campground	\$242,000	\$652,500	\$29,817	
	Frenchy Point Boat-in Campground	\$25,000	\$0	\$833	
	Dark Day Picnic Area	\$575,000	\$766,800	\$44,727	
	Sunset Vista Point	\$231,000	\$511,200	\$24,740	
	Dam Overlook	\$48,000	\$255,600	\$10,120	
	Moran Road Day Use Area	\$114,000	\$639,000	\$25,100	
	Dark Day Boat Launch	\$1,860,000	\$1,533,600	\$113,120	
	Cottage Creek Boat Launch	\$997,000	\$1,533,600	\$84,353	
	Water Supply System	\$1,805,000	\$625,500	\$81,017	
Electrical System (new)	\$2,371,000	\$625,500	\$99,883		
Floating Comfort Stations	\$752,000	\$125,100	\$29,237		
RR2	Provide Recreation Flow Information	\$0	\$150,000	\$5,000	Assumes no new equipment needed to implement condition, and information provided on CDEC, with some QA/QC.
<i>subtotal</i>		<i>\$14,094,000</i>	<i>\$12,930,000</i>	<i>\$901,000</i>	--

**Table 4.3-2. (continued)**

YCWA's Proposed Condition		Total Capital Cost Over 30 Years <sup>1</sup> (2013 U.S. Dollars)	Total O&M Cost Over 30 Years (2013 U.S. Dollars)	Annualized Cost Over 30 Years <sup>2</sup> Excluding Energy (2013 U.S. Dollars)	Assumptions Over 30 Years <sup>3</sup>
Number	Description				
<b>LAND USE</b>					
LU1	Implement Transportation System Management Plan	\$0	\$18,937,000	\$631,000	Includes annual O&M for all Project roads and trails, including recreation roads that serve four campgrounds, four day use areas, and access to three boat launches. Assumes repaving of existing asphalt roads at 20-year intervals. Includes periodic repairs of landslides and periodic replacement of culverts, signs and other road-related features as needed to maintain road safety and stability. Note: About 88% of the total Condition LU1 cost is for the rehabilitation and maintenance of existing Primary Project and recreation roads over the term of the new license. The remaining 12% is for the addition of eleven existing road segments and two short trails identified for exclusive use by YCWA for operation and maintenance of the Project.
LU2	Implement Fire Prevention and Response Plan	\$0	\$30,000	\$1,000	Assumes \$5,000/fire and six fires over term of license.
<i>subtotal</i>		<i>\$0</i>	<i>\$18,967,000</i>	<i>\$632,000</i>	--
<b>CULTURAL RESOURCES</b>					
CR1	Implement Historic Properties Management Plan	\$0	\$1,200,000	\$40,000	NRHP evaluation of 13 archeological sites at \$25,000/site; NRHP of 20 built sites at \$7,500/site; and data recovery at one site at \$100,000/site. Assumes annual costs of \$5,000/yr for compliance report and \$4,000/yr for meetings with tribes and agencies; and once every 10 years meeting with tribes and agencies to review HPMP at a cost of \$10,000/meeting. Also, assumes if New Bullards Bar Reservoir drawn down so that inundated sites are exposed, NRHP evaluation of the 11 inundated archeological sites and survey for cultural resources in areas not surveyed during relicensing study (below El. 1,805 ft), with an additional \$50,000 for analysis of collections at University of California, Sacramento from two of the submerged sites.
<i>subtotal</i>		<i>\$0</i>	<i>\$1,200,000</i>	<i>\$40,000</i>	--

**Table 4.3-2. (continued)**

YCWA's Proposed Condition		Total Capital Cost Over 30 Years <sup>1</sup> (2013 U.S. Dollars)	Total O&M Cost Over 30 Years (2013 U.S. Dollars)	Annualized Cost Over 30 Years <sup>2</sup> Excluding Energy (2013 U.S. Dollars)	Assumptions Over 30 Years <sup>3</sup>
Number	Description				
<b>AESTHETIC RESOURCES</b>					
VR1	Implement Visual Resource Management Plan	\$0	\$60,000	\$2,000	Estimate for initial implementation is \$35,000. Follow up maintenance and or replacement is estimated at \$25,000 over the course of 30 years
<i>subtotal</i>		<i>\$0</i>	<i>\$60,000</i>	<i>\$2,000</i>	--
<b>Total of Capital and O&amp;M Costs</b>		<b>\$17,744,000</b>	<b>\$66,740,000</b>	<b>\$2,817,000</b>	--
<b>Annual Lost Generation Cost Related to Implementation of YCWA's Conditions<sup>4</sup></b>		--	<b>\$7,890,000</b>	<b>\$263,000</b>	0.9% of No Action Alternative
<b>Total Cost</b>		<b>\$17,744,000</b>	<b>\$74,630,000</b>	<b>\$3,080,000</b>	--

<sup>1</sup> Capital cost include new facilities or equipment or replacement of existing facilities or equipment with facilities or equipment that extend the life expectancy of the existing facilities or equipment.

<sup>2</sup> Total annualized costs are calculated by summing Capital Cost and Total O&M Cost, and dividing the sum by 30.

<sup>3</sup> Assumes cost of O&M staff is \$600 per day.

<sup>4</sup> Individual recreation are costs for YCWA's proposed Condition RR1 were not rounded to the nearest \$1,000.

<sup>5</sup> Annual value of lost generation cost calculated in Table 7.0-1. Total cost computed by multiplying annual lost generation cost by 30 years.

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